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# RTD UPDATES: Tillage Systems

*Data updates for employees and colleagues of the Resources and Technology Division*

Resources and Technology Division  
Economic Research Service  
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## Field Crop Surveys Provide Cropping Practices Data

The annual Cropping Practices Surveys are USDA's primary information source for developing estimates of chemical use on field crops. In addition to fertilizer and pesticide information, these surveys include questions about tillage, irrigation, nutrient tests, use of livestock manure, plant density, and other applied management practices. These data can support a wide range of research on policies related to pesticide use in agriculture and its impacts on the environment and the safety of our food supply.

This issue of RTD UPDATES briefly summarizes cropping practices information by tillage system for wheat, corn, soybeans, rice, and cotton. The treatment of previous crop residues and preparation of seedbeds are important in providing a suitable environment for seed germination and plant growth. Treatment and preparation also affect how nutrients or pesticides may leach

through the soil profile or leave cropland through runoff and potentially affect water resources.

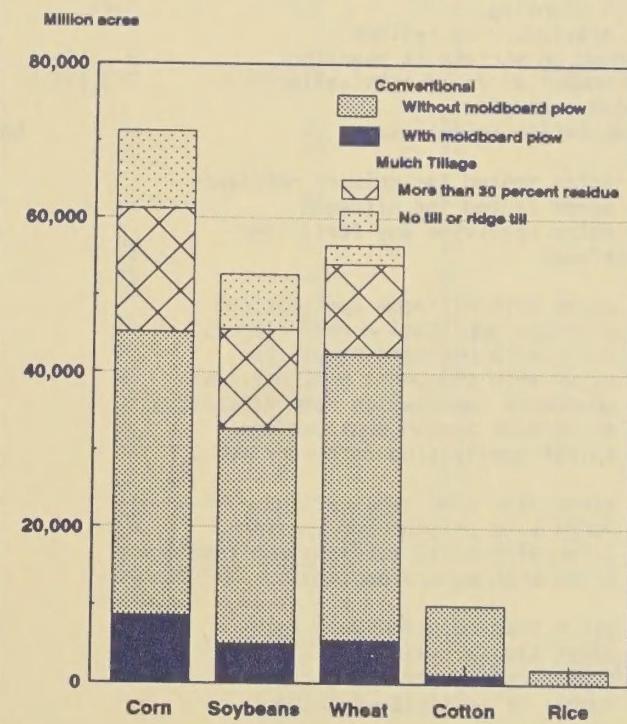
The table reports the frequency of nutrient applications, pesticide treatments, tillage trips, and residue for four general tillage classes. The 1992 results reported here represent about 90 percent of the U.S. corn, soybean, and wheat, 77 percent of cotton, and 65 percent of the rice acreage. Additional information from these surveys is reported in *Agricultural Chemical Usage, 1992 Field Crops Summary*, AgCh1(92), Nat'l. Agr. Stat. Serv., U.S. Dept. Agr., Mar. 1993, and *Agricultural Resources: Inputs Situation and Outlook*, AR-29, Econ. Res. Serv., U.S. Dept. Agr., Feb., 1993.

Information: Merritt Padgett, RTD (202)219-0434.

### Monthly Data Releases Planned

RTD UPDATES, published by the Resources and Technology Division, is a new series of monthly data highlights relating to agricultural resources, the environment, food safety, global change, and technology. Surveys of farm operators and others knowledgeable about changing agricultural resource conditions provide vital information to the RTD research program and are the source of these data highlights. RTD UPDATES gives readers recent data acquisitions, with only minimal interpretation or analysis. This quick release of data should enhance your analytical efforts and decisions. Please contact the individual listed in the text of RTD UPDATES on the availability and timing of additional information. Different resource and technology issues are featured each month, depending on availability of data.

### Tillage Practices on 1992 Field Crops



Cropping practices used on major field crops by tillage system, 1992 1/

Data item	Conventional with moldboard plow	Conventional without moldboard plow	Mulch >30% residue	Ridge and no-till systems	Total
<b>Corn:</b>					
Planted acres (1,000)	8,774	36,536	15,979	10,086	71,375
Percent acres irrigated	4	16	14	17	14
Average number of tillage operations through planting	3.91	3.42	2.50	1.13	2.95
Percent of previous crop residue remaining on surface at planting	2	15	37	61	25
Average number of field cultivations for weed control	1.00	.99	1.01	.57	.94
Plant population (plants/acre)	20,747	21,972	21,975	21,675	21,792
Percent acres tested for primary nutrients	33	43	45	47	43
Percent acres tested for nitrogen	27	35	34	42	34
Percent acres receiving any fertilizer applications	94	98	97	99	97
Percent acres with nitrogen applications	94	97	96	98	97
Average nitrogen application rate (lbs/ac.)	107	132	132	129	129
Percent acres using a nitrogen stabilizer	5	8	10	7	8
Percent acres with phosphate applications	85	84	79	82	82
Average phosphate application rate (lbs./ac.)	51	58	58	55	57
Percent acres with potash applications	80	72	68	64	70
Average potash application rate (lbs./ac.)	71	80	80	74	78
Percent acres with lime applications	7	6	3	5	5
Percent acres with sulphur applications	9	12	13	14	12
Percent acres with micro nutrient applications	10	12	13	14	12
Percent acres with manure applied	37	15	12	10	16
Percent acres treated with herbicides	94	96	97	99	96
Percent acres treated with insecticides	25	28	32	29	29
Percent acres treated with fungicides	*	0	0	0	0
Average number of pesticide treatments	1.57	1.70	1.85	1.71	1.72
<b>Soybeans:</b>					
Planted acres (1,000)	5,178	27,689	12,826	7,136	52,830
Percent acres irrigated	0	8	5	3	6
Average number of tillage operations through planting	4.07	4.12	3.05	1.04	3.44
Percent previous crop residue remaining on surface at planting	2	14	39	68	26
Average number of field cultivations for weed control	1.04	.95	.80	.18	.82
Plant population (plants/acre)	128,379	114,715	122,242	144,386	121,354
Percent acres tested for primary nutrients	28	26	28	33	28
Percent acres tested for nitrogen	22	17	16	21	18
Percent acres receiving any fertilizer applications	27	30	21	33	29
Percent acres with nitrogen applications	17	15	12	18	15
Average nitrogen application rate (lb./ac.)	14	21	27	26	22
Percent acres with nitrogen Stabilizer	*	*	*	*	*
Percent acres with phosphate applications	22	25	16	24	23
Average phosphate application rate (lbs./ac.)	38	46	48	52	47
Percent acres with potash applications	23	27	16	31	26
Average potash application rate (lbs./ac.)	67	73	76	82	75
Percent acres with lime applications	3	6	3	6	5
Percent acres with sulphur applications	1	1	1	1	1
Percent acres with micro nutrient applications	1	2	1	2	2
Percent acres with manure applied	9	4	8	7	6
Percent acres treated with herbicides	98	97	98	97	97
Percent acres treated with insecticides	*	2	*	1	1
Percent acres treated with fungicides	*	1	*	*	*
Average number of pesticide treatments	1.50	1.61	1.57	1.73	1.61

Continued -

Cropping practices used on major field crops by tillage system, 1992--continued

Data item	Conventional with moldboard plow	Conventional without moldboard plow	Mulch >30% residue	Ridge and no-till systems	Total
<b>Rice:</b>					
Planted acres (1,000)	*	1,866	65	18	1,950
Average number of tillage operation through planting	*	6.5	5.4	*	6.4
Percent of previous crop residue remaining on surface at planting	*	2	54	*	5
Average number of field cultivations for weed control	*	*	*	*	*
Percent acres tested for primary nutrient	*	24	34	*	24
Percent acres tested for nitrogen	*	21	34	*	21
Percent acres receiving any fertilizer applications		98	100	*	98
Percent acres treated with nitrogen	*	98	100	*	98
Average nitrogen application rate (lb./ac.)	*	134	129	*	134
Percent acres using a nitrogen stabilizer	*	2.5	0	*	*
Percent acres treated with phosphate	*	33	45	*	34
Average phosphate application rate (lb./ac.)	*	44	45	*	44
Percent acres treated with potash	*	36	55	*	37
Average potash application rate (lb./ac.)	*	51	38	*	50
Percent acres with lime applications	*	*	*	*	*
Percent acres with sulphur applications	*	10	8	*	10
Percent acres with micro nutrient applications	*	9	19	*	9
Percent acres with manure applied	*	3	0	*	3
Percent acres treated with herbicides	*	97	100	*	97
Percent acres treated with insecticides	*	11	0	*	11
Percent acres treated with fungicides	*	19	19	*	19
Average number of pesticide treatments	*	2.34	2.33	*	2.35
<b>All wheat:</b>					
Planted acres (1,000)	5557	37,024	11,525	2,433	56,540
Percent acres irrigated	3.8	5.9	3.6	1.7	5.0
Average number of tillage operations through planting	4.8	4.7	3.6	1.1	4.32
Percent of previous crop residue remaining on surface at planting	1.5	14.3	39.1	56.2	19.9
Average number of field cultivations for weed control	0	0	0	0	0
Plant population (plants/acre)	1,831,131	1,721,233	1,567,875	1,727,624	1,700,870
Percent acres tested for primary nutrients	34	24	20	35	25
Percent acres tested for nitrogen	30	20	13	21	20
Percent acres receiving any fertilizer Applications	95	84	74	92	84
Percent acres with nitrogen applications	95	83	74	92	83
Average nitrogen application rate (lb./ac.)	73	65	48	61	62
Percent acres using a nitrogen stabilizer	1	1	1	2	1
Percent acres with phosphate applications	69	54	51	77	56
Average phosphate application rate (lb./ac.)	33	35	27	38	33
Percent acres with potash applications	17	20	11	26	18
Average potash application rate (lb./ac.)	37	39	31	61	39
Percent acres with lime applications	1	1	1	4	1
Percent acres with sulphur applications	12	9	5	13	7
Percent acres with micro nutrient applications	3	2	1	3	2
Percent acres with manure applied	2	3	2	2	3
Percent acres treated with herbicides	61	52	50	56	53
Percent acres treated with insecticides	4	4	2	1	4
Percent acres treated with fungicides	4	3	1	1	2
Average number of pesticide treatments	1.27	1.22	1.23	1.20	1.22

Continued -

Cropping practices used on major field crops by tillage system, 1992--continued

Data item	Conventional with moldboard plow	Conventional without moldboard plow	Mulch >30% residue	Ridge and no-till systems	Total
<b>Cotton:</b>					
Planted acres (1,000)	1,186	8,983	22	8	10,200
Percent acres irrigated	44	43	*	*	43
Average number of tillage operations through planting	6.8	6.3	*	*	6.4
Percent of previous crop residue remaining on at planting	*	3	*	*	2
Average number of field cultivations for weed control	2.63	3.17	*	*	3.19
Plant population (plants/acre)	38,732	41,104	*	*	40,809
Percent acres tested for primary nutrient	21	29	*	*	28
Percent acres tested for nitrogen	3	22	*	*	19
Percent acres receiving any fertilizer applications	78	81	*	*	80
Percent acres with nitrogen applications	77	80	*	*	80
Average nitrogen application rate (lb./ac.)	78	89	*	*	88
Percent acres with phosphate applications	55	47	*	*	48
Average phosphorus application rate (lb./ac.)	57	46	*	*	48
Percent acres with potash applications	33	38	*	*	37
Average potash application rate (lb./ac.)	22	60	*	*	56
Percent acres with lime applications	*	1	*	*	1
Percent acres with sulphur applications	19	22	*	*	22
Percent acres with micro nutrient applications	17	19	*	*	18
Percent acres with manure applied	2	4	*	*	3
Percent acres treated with herbicides	90	91	*	*	91
Percent acres treated with insecticides	74	62	*	*	63
Percent acres treated with fungicides	1	7	*	*	6
Average number of pesticide applications	3.72	6.25	*	*	5.94

\* represents less than 1 percent of the acres or there was insufficient data to report.

1/ The following States are included in the Cropping Practices Surveys: Corn: GA, IL, IN, IA, KS, KY, MI, MN, MO, NE, NC, OH, PA, SC, SD, TX, and WI. Rice: AK and LA. Soybeans: AR, GA, IL, IN, IA, KS, KY, LA, MN, MS, MO, NE, NC, OH, SD, and TN. Cotton: AZ, AR, CA, LA, MS, and TX. Wheat: AR, CO, ID, IL, KS, MN, MO, MT, NE, ND, OH, OK, OR, SD, TX, and WA.

#### RTD UPDATES

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